

c. KSC Launch Operations requirements for integrated space vehicle testing, launch facility verification and Launch Team readiness.

d. Additional requirements for assuring satisfaction of Flight Crew, Launch Crew and Range Safety, as well as assuring verification of the Launch Site portion of the Manned Space Flight Network.

A general requirement of the Launch Operations Test and Checkout Plan is to assure the application of experience and increased hardware reliability to reduction of required launch vehicle, spacecraft, and space vehicle testing while maintaining necessary confidence in testing and assuring accomplishment of test requirements.

The Launch Operations Test and Checkout Plan will be prepared in three (3) volumes as follows:

5.1.2 VOLUME I - SPACE VEHICLE TEST AND CHECKOUT PLAN

The Space Vehicle Test and Checkout Plan is required to fulfill the following:

a. Define the integrated tests and sequence of integrated testing required to fulfill KSC Test and Checkout Requirements and to accomplish those MSC and MSFC Test and Checkout Requirements that are not satisfied by the individual spacecraft and launch vehicle tests.

b. Establish objectives that will assure accomplishment of the test and checkout requirements for the defined space vehicle integrated tests.

c. Assure integration of Launch Vehicle and Spacecraft Test and Checkout Plans for integrated space vehicle testing.

5.1.3 VOLUME II - LAUNCH VEHICLE TEST AND CHECKOUT PLAN

The Launch Vehicle Test and Checkout Plan is required to fulfill the following:

- a. Define the individual launch vehicle tests, the launch vehicle portion of space vehicle integrated tests and sequence of testing required to satisfy all launch vehicle related Test and Checkout Requirements.
- b. Establish test objectives that will assure accomplishment of the Test and Checkout Requirements for all launch vehicle defined tests.
- c. Assure integration of stage test and checkout planning for launch vehicle integrated tests and provide all launch vehicle test and checkout planning under one document title.

5.1.4 VOLUME III - SPACECRAFT TEST AND CHECKOUT PLAN

The Spacecraft Test and Checkout Plan is required to fulfill the following:

- a. Define the individual spacecraft tests (CSM, LM, LRV, LES, SLA, OWS, ATM, MDA-AM and Payload Shroud), the spacecraft portion of space vehicle integrated tests, and sequence of testing required to satisfy all spacecraft related Test and Checkout Requirements.
- b. Establish test objectives that will assure accomplishment of the Test and Checkout Requirements for all spacecraft defined tests.
- c. Assure integration of applicable spacecraft test and checkout planning for spacecraft integrated tests and provide all spacecraft test and checkout planning under one document title.

6.1 RESPONSIBILITIES

6.1.1 GENERAL

6.1.1.1 The Director of Launch Operations is responsible for the overall preparation and management of the Launch Operations Test and Checkout Plans.

6.1.1.2 The Director of Launch Vehicle Operations, the Director of Spacecraft Operations, the Test Planning Manager, and the Test Operations Manager are responsible for insuring compliance with the provisions of this directive within their respective organizations.

6.1.2 SPECIFIC

6.1.2.1 DIRECTOR, LAUNCH VEHICLE OPERATIONS

The Director of Launch Vehicle Operations is responsible for the following functions:

a. Preparation of appropriate instructions for the Directorate of Launch Vehicle Operations and associated contractors delineating responsibilities and defining interfaces.

b. Preparation and management of the Launch Vehicle Test and Checkout Plan on a per mission basis in accordance with the appropriate Launch Vehicle Test and Checkout Requirements Document and Launch Vehicle Operations Safety criteria.

c. Coordination of planning with the Test Planning Manager on the Launch Vehicle portion of all space vehicle integrated tests.

d. Final determination that all Launch Vehicle Test and Checkout Plans have been reviewed by appropriate elements for technical correctness and adequacy.

e. Signature approval and transmission of Launch Vehicle Test and Checkout Plans to the Director of Launch Operations, for submittal to the responsible KSC Program Manager. This submittal of the first release

only for a particular program/vehicle series basic document will be accomplished no later than twelve (12) weeks prior to the first applicable test. Development Center(s) signature approval with review comments on the plans are required no later than eight (8) weeks prior to the first applicable test.

f. Integration of MSFC comments into the approved Launch Vehicle Test and Checkout Plans.

g. Securing of MSFC approval through the appropriate channels of all deviations from MSFC Test and Checkout Requirements Document.

6.1.2.2 DIRECTOR OF SPACECRAFT OPERATIONS

The Director of Spacecraft Operations is responsible for the following functions:

a. Preparation of appropriate instructions for the Directorate of Spacecraft Operations and associated contractors delineating responsibilities and defining interfaces.

b. Preparation and management of the Spacecraft Test and Checkout Plan on a per mission basis in accordance with the appropriate Spacecraft Test and Checkout Requirements Document and Spacecraft Operations Safety criteria.

c. Coordination of planning with the Test Planning Manager on the Spacecraft portion of all space vehicle Integrated tests.

d. Final determination that all Spacecraft Test and Checkout Plans have been reviewed by appropriate elements for technical correctness and adequacy.

e. Signature approval and transmission of Spacecraft Test and Checkout Plans to the Director of Launch Operations, for submittal to the responsible KSC Program Manager. This submittal of the first release only for

a particular program/vehicle series basic document will be accomplished no later than twelve (12) weeks prior to the first applicable test. Development Centers/s signature approval with review comments on the plans are required no later than eight (8) weeks prior to the first applicable test.

f. Integration of Development Center/s comments into the approved Test and Checkout Plans.

g. Securing of responsible Development Center approval through appropriate channels of all deviations from the Development Center Test and Checkout Requirements Document.

6.1.2.3 TEST PLANNING MANAGER

The Test Planning Manager is responsible for the following functions:

a. Preparation of appropriate instructions for the Test Planning Office and associated contractors delineating responsibilities and interfaces in the preparation and management of Space Vehicle Test and Checkout Plans.

b. Preparation and management of Space Vehicle Test and Checkout Plans and changes thereto for the Director of Launch Operations for Space Vehicle Integrated Tests and Operations based upon coordinated planning with Launch Vehicle Operations and Spacecraft Operations.

c. Release of approved Space Vehicle Test and Checkout Plans, for submittal to the responsible KSC Program Manager. This submittal of the first release only for a particular program/vehicle series basic document will be accomplished no later than twelve (12) weeks prior to the first applicable test.

d. Integration of comments from other KSC organizations into the Space Vehicle Test and Checkout Plans.
(Volume I will not be sent to the Development Centers for approval since the test and checkout requirements from those centers will be addressed in Volumes II and III.)

7.1 INSTRUCTIONS

This directive establishes the management system of the preparation and management of Launch Operations Test and Checkout Plans. The contents of this directive will be further amplified by additional detailed implementation instructions prepared by the Director of Launch Vehicle Operations, the Director of Spacecraft Operations, and the Test Planning Manager for the Director of Launch Operations.

7.1.1 FORMAT

The format and amplifying guidelines specified below are applicable to all three volumes and will be followed in the preparation of Launch Operations Test and Checkout Plans.

FORMAT OF TEST AND CHECKOUT PLAN

Table of Contents

Section I	Purpose
Section II	S/V, L/V or S/C Flow Chart
Section III	Test and Checkout Requirements
	3.1 Index of Requirements vs TCP's.
	3.2 Deviations from Requirements
Section IV	Outlines of Planned TCP's

Appendices

Section II of the Space Vehicle Test and Checkout Plan (Volume I) will contain a flow chart to identify the inputs and sequence of the required space vehicle integrated tests.

Section II of the Launch Vehicle and Spacecraft Test and Checkout Plan (Volumes II and III) will contain a test sequence flow chart for each launch vehicle and spacecraft from receipt of hardware at KSC to launch. The chart will identify, in critical path sequence, the required major TCP's and test milestones necessary to accomplish test objectives.

Section III of each of the three volumes will contain an index of all test and checkout requirements vs TCP's that meet these requirements. Also, a detailed list of deviations from test and checkout requirements, if any, will be included with reasons for deviations.

Section IV of each of the three volumes will contain an outline defining TCP title, TCP number, test objectives, test description, test location, test configuration, software requirements, hazard identification, major support requirements, identification of organizations outside of KSC that will be involved, and safety requirements.

All three volumes may also contain appendices of collated data (S/V Contingency Plans, L/V Subtask and Standby TCP's, and S/C Contingency Procedures) which may be useful to Launch Vehicle Operations or Spacecraft Operations, but not requiring review or approval by the Development Centers.

7.1.2 PREPARATION AND APPROVAL

7.1.2.1 GENERAL

The Space Vehicle Test and Checkout Plan (Volume I), Launch Vehicle Test and Checkout Plan (Volume II), and Spacecraft Test and Checkout Plan (Volume III) will be prepared, distributed for review and approved by the appropriate organizations as shown on the chart of Figure 1. The Director of Launch Operations will submit all three volumes of the 1st release only to the responsible KSC Program Manager for review and his necessary actions.

7.1.3 REVISIONS

7.1.3.1 GENERAL

The necessary changes and/or additions to the Test and Checkout Plan (Volumes I, II and III) will be classified into two (2) revision categories; Class I revisions and Class II revisions.

7.1.3.2 CLASS I REVISION

A Class I revision will require page(s) changes to Volume I, II, or III of the Test and Checkout Plan and will be limited in scope to the following:

- a. Deviations from Test and Checkout Requirements, or Safety Regulations.
- b. Deviations, additions or deletions of space vehicle, launch vehicle or spacecraft tests (including experiments) and test sequence which affect accomplishment of Test and Checkout Requirements.
- c. Affect the schedule.
- d. Impact Center resources.

All Class I revision requests concerning the Launch Vehicle or Spacecraft portion of Space Vehicle integrated testing will be coordinated with the Test Planning Manager, prior to submittal by the Director of Launch Operations to the appropriate KSC Program Manager for review and subsequent submittal to the appropriate Development Center (if necessary) for approval. No page change(s) for Class I revisions will be made to the Test and Checkout Plan that affect tests scheduled to be run 30 days or less from the date of approval of the revision. Any required Class I revisions required after this time will be processed by a short cycle TWX system or approved by a Development Center designated representative at KSC, when coordination and approval by MSC or MSFC is required.

7.1.3.3 CLASS II REVISION

Changes outside the scope of Class I revisions will be processed as Class II revisions, not requiring page change(s) to the original documents but requiring a specified distribution for planning purposes. All Class II revisions for the first release of the basic documents for a particular program/vehicle series will be directed to the responsible KSC Program Manager. Later editions and revisions thereto

of all three volumes of the Test and Checkout Plan will be approved by the Director of Launch Operations or his designee and will not require signature concurrence by the responsible KSC Program Manager.

NOTE

All revisions which affect intercenter agreements, budget ceiling, controlled milestones or program directives will be submitted to the responsible KSC Program Manager for concurrence.

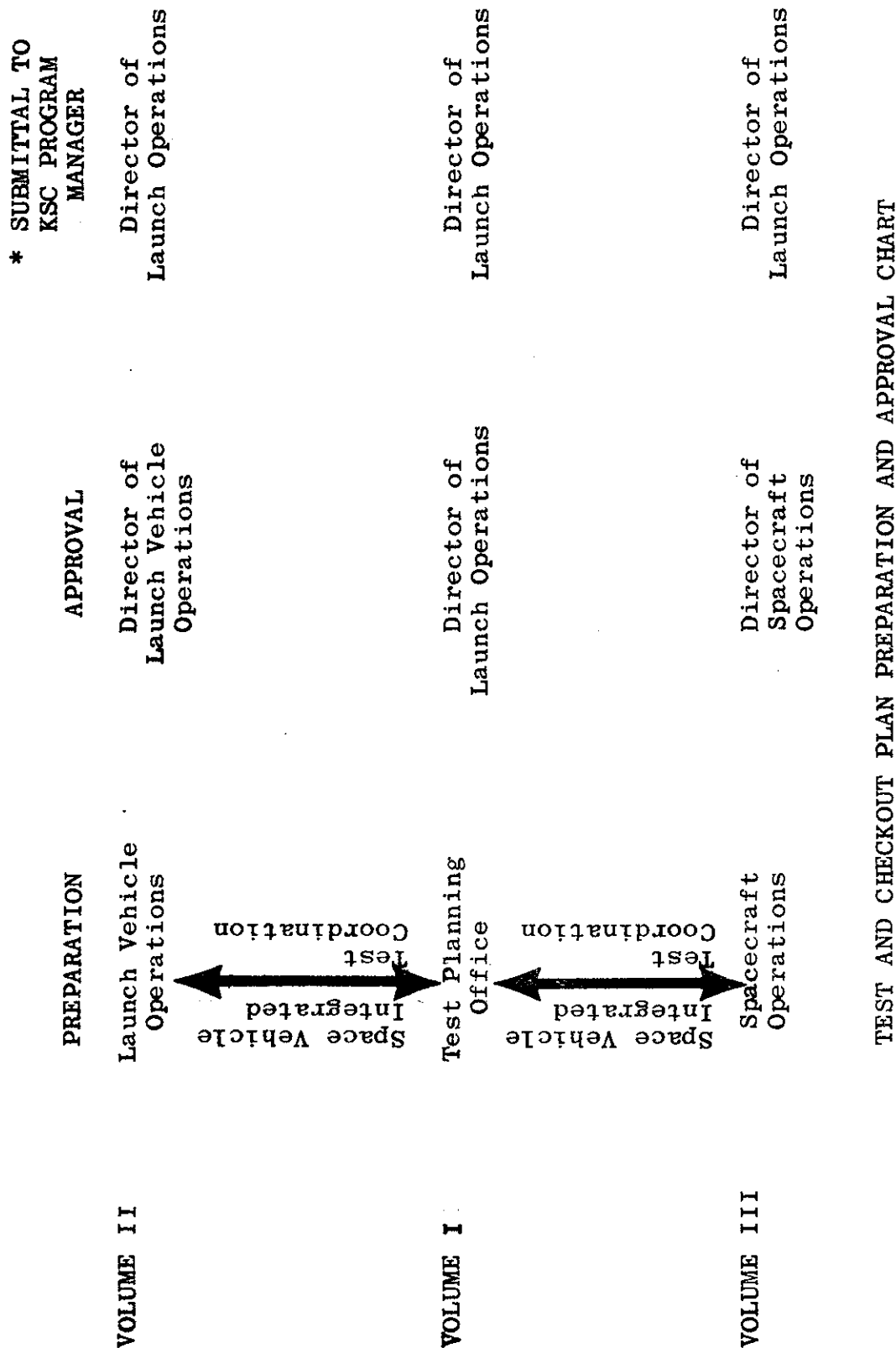


FIGURE 1

* First Release only.

c. KSC Launch Operations requirements for integrated space vehicle testing, launch facility verification and Launch Team readiness.

d. Additional requirements for assuring satisfaction of Flight Crew, Launch Crew and Range Safety, as well as assuring verification of the Launch Site portion of the Manned Space Flight Network.

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- b. Establish test objectives that will assure accomplishment of the Test and Checkout Requirements for all launch vehicle defined tests.
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- a. Define the individual spacecraft tests (CSM, LM, LRV, LES, SLA, OWS, ATM, MDA-AM and Payload Shroud), the spacecraft portion of space vehicle integrated tests, and sequence of testing required to satisfy all spacecraft related Test and Checkout Requirements.
- b. Establish test objectives that will assure accomplishment of the Test and Checkout Requirements for all spacecraft defined tests.
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c. Coordination of planning with the Test Planning Manager on the Spacecraft portion of all space vehicle integrated tests.

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